

CLAIMS

What is claimed is:

1. A radio communications system comprising:
 - a) an intrinsic pavement transmitter and antenna;
 - 5 b) a first transmitter/receiver, at a first point along the intrinsic pavement transmitter and antenna, and in communication with an end-user; and
 - c) a second transmitter/receiver, at a second point along the intrinsic pavement transmitter and antenna, and in communication with an end-user; wherein the intrinsic pavement transmitter and antenna conducts radio frequency signals between the first and second transmitter/receiver.
- 10 2. The radio communications system of claim 1, wherein the second transmitter/receiver is coupled to the end-user with a hard wire.
- 15 3. The radio communications system of claim 1, wherein the second transmitter/receiver is a conductive surface portion of the intrinsic pavement transmitter and antenna.
4. The radio communications system of claim 1, wherein the first transmitter/receiver is adjacent to the intrinsic pavement transmitter and antenna.
- 20 5. The radio communications system of claim 1, wherein the first transmitter/receiver is located in the intrinsic pavement transmitter and antenna.

6. An intrinsic pavement transmitter and antenna, comprising a roadway, including:

- a) a suitable wearing course material; and
- b) an effective amount of radio frequency conductive material, sufficient to transmit and receive radio frequencies.

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7. The intrinsic pavement transmitter and antenna of claim 6, wherein the radio frequency conductive material is at least one member selected from the group consisting of: radio frequency transmittable polymers, metal shavings, metal dust and conductive carbons.

10 8. The intrinsic pavement transmitter and antenna of claim 7, wherein the conductive carbon is at least one member selected from the group consisting of carbon black, carbon fiber, graphite and coke breeze.

15 9. The intrinsic pavement transmitter and antenna of claim 7, wherein the radio frequency transmittable polymers include: polyacetylene, polyaniline, polypyrrole, polythiophenes, polyethylenedioxythiophene and poly(p-phenylene vinylene)s.

20 10. The intrinsic pavement transmitter and antenna of claim 7, wherein the metal shavings are at least one member selected from the group consisting of: iron, iron alloys, aluminum, aluminum alloys, copper and copper alloys.

11. The intrinsic pavement transmitter and antenna of claim 7, wherein the metal dust is at least one member selected from the group consisting of: iron, iron alloys, aluminum, aluminum alloys, copper and copper alloys.

5 12. The intrinsic pavement transmitter and antenna of claim 6, wherein the suitable wearing course material is at least one member selected from the group consisting of: asphalt and concrete.

10 13. The intrinsic pavement transmitter and antenna of claim 6, wherein the conductive material is intermixed with the wearing course material.

14. The intrinsic pavement transmitter and antenna of claim 6, wherein the conductive material and the wearing course material are substantially distinct layers.

15 15. The intrinsic pavement transmitter and antenna of claim 6, further comprising an insulating layer proximate the roadway.